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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : G06F 17/30 | A1

(11) International Publication Number: WO 00/54183

(43) International Publication Date: 14 September 2000 (14.09.00)

(21) International Application Number: PCT/US00/05595

(22) International Filing Date: 3 March 2000 (03.03.00)

(30) Priority Data:
60/123,323 6 March 1999 (06.03.99) US

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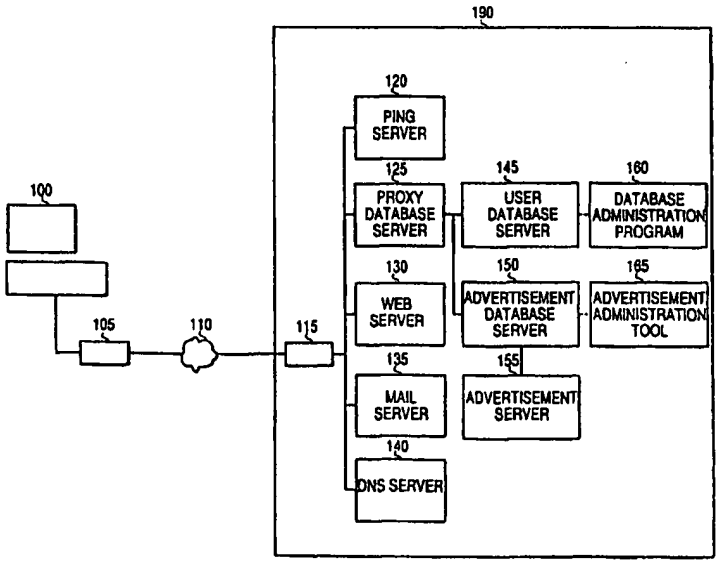
(81) Designated States: CA, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: METHOD FOR PROVIDING INTERNET SERVICE WITH ADVERTISING



(57) Abstract

A method and system of displaying advertisements (155) while providing an Internet connection (130). The method comprises the steps of establishing a connection between a computer and an Internet Service Provider, framing a tool bar at the top of the screen on a computer monitor, shifting any icons and windows on the display below the tool bar, displaying an advertisement in the tool bar, and maintaining a connection between the computer and the Internet Service Provider for as long as the advertisement is displayed on the monitor. A terminal stay resident program or a ping server (120) monitor whether the advertisement is properly positioned and continuously displayed on the computer monitor. The advertisements are also displayed in a dialing window when using a dial-up networking entry to establish a connection between the computer and the Internet Service Provider.

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TITLE

Method for Providing Internet Service with Advertising

BACKGROUND OF THE INVENTION

The present invention relates to the internet. More particularly, the invention relates to a method and apparatus of displaying advertisements while providing an internet connection.

BRIEF SUMMARY OF THE INVENTION

The present invention is a system and method for providing internet service with advertising. A connection is established between a computer and an Internet Service Provider ("ISP"). Advertisements are displayed in an advertisement bar, which is for example a Windows® tool bar framed at the top of the client computer. Any icons or windows on the client desktop are shifted beneath the advertisement bar. If another program attempts to load icons or windows on top of the advertisement bar, those icons or windows are also shifted beneath the advertisement bar.

In the present invention, the advertisement bar must be loaded to maintain a connection with the ISP. One method of determining whether the advertisement bar is loaded is for a Terminal Stay Resident program embedded on the client's computer to take a screen shot of the client computer and analyze the color of pixels. If the pixels do not match what should be there, it is assumed the advertisement bar has been removed. If the advertisement bar is removed or, alternatively, if it is moved from a selected position, then the client is disconnected from the ISP.

Another method to determine if the ISP client program is running is by use of a ping server. The ping server accomplishes this by sending an encrypted message to each client

connected to the ISP. The client program must respond automatically as requested in the message. If the client does not respond, it is assumed that the ISP client program has been altered and a message is then sent to a Radius server to disconnect the client.

The present invention also provides for displaying advertisements when establishing a connection to the ISP. The client computer will use the established dial-up networking entry to make a connection. While the connection is being made, advertisements appear with the dialing window, which can then be moved on to the client screen.

According to the invention, there is provided a method for providing an internet service provider connection with advertising. The method includes establishing a connection between a computer and an internet service provider, framing a tool bar on a computer monitor, shifting any object displayed on the computer monitor below the tool bar and displaying an advertisement in the tool bar. Also according to the invention, there is provided a system for providing an internet service provider connection with advertising on a user's computer. The system includes a computer operable to connect to an internet service provider, a tool bar framed on a computer monitor, an object displayed on the monitor wherein the object is shifted below the tool bar on the monitor, and an advertisement displayed in the tool bar.

These and other objects, features and advantages of the present invention are readily apparent from the following drawings and detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of an exemplary Internet Service Provider ("ISP") system.

FIG. 2 is a block diagram of an exemplary client system which may be used in conjunction with the exemplary ISP system.

FIG. 3 is a flowchart describing the installation of a setup program, the set up of a new user, and the basic processing of the ISP client program for an exemplary ISP system.

FIG. 4 illustrates the preferred placement of the advertisement bar on a desktop.

FIG. 5 illustrates the functions of the advertisement bar.

FIG. 6 is a block diagram of the method of the ISP client program for selecting advertisements from the user's list of advertisements.

FIG. 7 is a block diagram describing the selection of advertisements for each user and the functioning of the advertisement administration tool.

FIG. 8 describes the information that may be communicated between a client system and a server system according to an embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The invention is described only by way of example in its application to client/server systems and Internet Service Providers (ISPs). The invention has much broader utility and is not in any way limited to either client/server systems or ISPs. The invention applies to network clients and individual end users.

Figure 1 illustrates an exemplary ISP system embodying the invention. The exemplary ISP system includes a client computer **100**, a client connection means **105**, a connection line **110**, an ISP connection means **115**, and an ISP system **190**. The client connection means **105** and the ISP connection means **115** can implemented, for example, as modems. The ISP connection means **115** can further be implemented, for example, as a bank of modems. Other connection means are equally appropriate.

INTERNET SERVICE

One embodiment of the invention provides a method and apparatus for providing clients with free internet service in exchange for displaying advertising on clients' computers. Other embodiments of the invention provide a method and apparatus of displaying advertisements while providing internet connections to clients and users.

INSTALLATION AND SETUP OF THE ISP CONNECTION

Reference is made to Figures 1 and 2. Figure 2 illustrates components of a conventional client system **100**, **105** which may be used with this invention. The client system includes a monitor **205**, a processing unit **210**, floppy drive **215**, compact diskette drive **220**, a keyboard **225**, and a mouse **230**. Processing unit **210** also includes a hard drive.

Figure 3 describes the installation of startup software on a client computer and setup of a new user account with the ISP. According to the preferred embodiment, client installs and sets up software provided by the ISP in order to initiate a first internet connection. The client can download the installation and setup software **305** through an internet connection or from a floppy diskette or a compact disk. Once a client downloads the software, the installation and setup program is stored at the client location, such as on the hard drive of the client computer. The installation and setup software includes an ISP client program.

If a client downloads the software using an internet connection, the client conventionally would enter a specified Uniform Resource Locator ("URL") which indicates the software location on a remote web/file server. The ISP places the installation and setup software on the web server **130**, for example, by uploading it using a FTP ("File Transfer Protocol") client program.

Once downloaded and installed **310**, the installation and setup program scans the client computer settings and hardware and copies necessary files to the user's computer for the installation and setup. Should the client computer have any incorrect settings, the setup program will warn the user and provide information on altering settings.

The installation and setup program advantageously will prompt the client to select a dial-up number based on an ISP location closest to the client. According to the preferred embodiment, the client can select the ISP location by choosing the appropriate area on a world map displayed on the client computer. As the client selects an area, the map will zoom in on a country and then a region. Once the client zooms in a region, the client can select a dial-up number from a list of area codes in various countries. Alternatively, the client can select the ISP location by completing fields such as country and area code.

The installation and setup software will then create a program group entry, which allows the ISP client program to be displayed in the program group of the Windows® start button. The installation and setup software also creates a desktop icon for easy access to the service.

NEW USER SETUP

The installation and setup software prompts the client to create a new user account **315**. Preferably, the installation and setup software creates a phone book entry within Windows® Dial-Up Networking. The phone book entry contains an ISP phone number selected based on the users location. The Windows® Dial-Up Networking phone book is one standard method for connecting to the Internet.

The installation and setup software will dial the phone book entry of the selected ISP to connect to the internet. The installation and setup software will dial the phone book entry

using a standard user name and password, which only provides the user with local access to the selected Internet Service Provider. The standard user name and password is encrypted in a file on the client computer and cannot be easily determined by the client. This process of connecting a user to the ISP is not displayed on the client screen and is invisible to the user.

The installation and setup software will attempt to run the default browser on the client computer. If the client does not have a browser, the client will be given the opportunity to download one of a selection of browsers from the web server **130**.

The installation and setup software will then direct the browser **320** to open a web page which interfaces with the proxy database server. A web page will be displayed which allows a user to select a user name, a password, and an e-mail address. The user will also provide demographic information such as phone number, address, race, sex, date of birth, interests, and income. Alternatively, a small executable program may be downloaded that contains the list of questions. Rather than loading a browser, a "new user" program is loaded that performs the same functions.

Once the user submits this information, the account server preferably does a validity check **325** to ensure that all the information is correct and there are no redundant account names created. Upon clearing the validity check, an e-mail account and web page account are created for the user **325**.

The client is prompted to close the browser, disconnect, and reconnect using the selected user name and password **330**. The ISP client program loads the main connection screen and the user is prompted to enter the user name and password created. A permanent phone book entry is created with the user name and password.

The user information is stored in a user database server **145**, which is the central data warehouse for all user-specific information. The user database server **145** allows a proxy database server **125** access to information on users. The proxy database server **125** is the only server which the client program connects to. The proxy database server **125** serves as a translator, translating the clients language into actions carried out on the server side.

CONNECTING TO THE ISP

Once an account has been created, the client has at least two possible methods of connecting to the ISP **330**. One method by which the client may connect to the internet is by using the dial-up-networking entry previously created. If a client connects using dial-up networking, the client must enter a user name and password which will be authenticated in a user database by the Proxy Database Server **125**. A Radius Server may be used for the authentication procedures. The client will then be assigned a DNS server **140** to access the internet. The DNS server **140** matches web URLs to Internet Protocol ("IP") addresses.

The ISP client program detects when the client has connected to the ISP. This feature of the ISP client program may be implemented as a Terminal Stay Resident ("TSR") **345**. TSR runs continuously. It is preferably a small program with a size on the order of 50 KB, and is stored in the memory of the client computer separately from other portions of the ISP client program. TSR monitors the user's IP address. If the client IP address matches the ISP's address, then TSR directs the ISP client program to load **350**. If the advertisement bar is not detected, then the client is disconnected from the ISP **355**. The advertisement bar as illustrated in Figure 4 is a frame which runs across the client screen in which advertisements are displayed **405**.

A second method which the client can use to connect to ISP is by running the ISP client program. This can be done for example by using the mouse to click on a program icon which starts the connection procedure. The user then has the option of clicking on a connect button to start the connection or to modify the user settings (including the ISP dial-up number and the modem type). The client computer will use the established dial-up-networking entry to make a connection. While the connection is being made, advertisements appear within the dialing window. These advertisements can then be moved on to the client screen.

CONNECTING TO THE INTERNET

Reference is made to Figure 1. Once the connection is made with the ISP, the ISP client program automatically connects to a web server **130** and preferably downloads a small version file. The version file indicates the most recent version of files available. If the ISP client program detects that it needs to update any versions of files, the ISP client program will communicate to the ISP web server **130** to automatically download and install new components. A dynamically linked library ("DLL") embedded within the ISP client program handles the intricate task of automatically updating files on the client computer.

The ISP client program then interacts with the proxy database server **125** in order to log a user into the system. Proxy database server **125** manages client interactions preferably via a Structured Query Language ("SQL") database. Proxy database server **125** connects to the client and handles client/server interactions. Proxy database server **125** also translates the ISP client program communication into SQL commands to record information to a SQL database. Proxy database server **125** is responsible for logging a user onto the service, looking up data from a database requested by the ISP client program and recording data to a SQL database.

Proxy database server **125** will connect to the user database server **145** and compile a list of advertisements for the user to view. Proxy database server **125** will transmit this information to the ISP client program **335**. This list may be stored in the memory of the client computer.

Proxy database server **125** preferably will check for news items and system messages **340** within user database **145**. Should there be any news items for that user, they will be sent to the ISP client program to be displayed.

The list of advertisements preferably contains a number of advertisements the user is to view and the weights associated with the advertisement. The weight indicates the priority of the advertisement relative to other advertisements, the location of the advertisement, and the maximum number of times a particular advertisement should be displayed. Advertisements will be displayed in the advertisement bar **405** which is loaded as long as the client maintains a connection with the ISP **350**.

The user's demographic information may also be updated when the user logs on. Should a user's profile contain any questions that have not been answered, the proxy database server **125** will transmit those questions to the client computer. The ISP client program preferably will then freeze all operations until the user answers the questions. The question answers are transmitted from the client to the proxy database server **125** and are in turn added to the user database server **145**.

ADVERTISEMENT BAR DISPLAY AND FUNCTION

Advertisements are displayed in advertisement bar **405** while the client is connected to the ISP. Periodically, for example, each minute, the ISP client program cycles through the list of advertisements and based on their weights selects an advertisement to display. The ISP

client program advantageously first looks on the client hard drive cache to determine if the advertisement has been previously downloaded. If the advertisement has been stored on the client hard drive, the ISP client program then loads the advertisement from that location. If however the advertisement is not on the user's hard drive, the ISP client program downloads the advertisement **360** from web server **130**. The ISP client program will continue to cycle through advertisements for the duration of the connection with the ISP.

Advertisements can be comprised of any combination of information including textual, graphic, audio, or video data or a combination thereof. The advertisements can be stored in a compressed data format, such as JPEG or other proprietary format. The advertisements may also be executable programs.

Advertisement bar **405** is preferably a Windows® tool bar framed at the top of the client computer that allows various advertisements to be displayed.

Any icons or windows on the client desktop are shifted beneath advertisement bar **405**. If another program attempts to load icons or windows on top of advertisement bar **405**, the icons or windows are shifted beneath the advertisement bar.

The advertisements may be linked to either a web site URL or an executable program. Should a user select an advertisement by clicking with a mouse button on the advertisement, the client default browser and the advertisement URL may be loaded.

Alternatively, a previously downloaded program may be executed. This is simpler, faster and more powerful than loading a web page. It allows advertisers to make a great deal of information available to the client quickly. Figure 5, items **505** (illustrated as a pull-down menu) and **510** illustrate the functions of the advertisement bar. In the illustrated

embodiment, the functions include web search, email, messenger, games, settings, help, disconnect, and web links.

When an advertisement is displayed or the user clicks on an advertisement, a message is sent to the proxy database server **125**, which compiles a list of records and updates the advertisement server **155**. An impression is a data record of a user's activity, including such things as when a user has clicked on an advertisement or passed the mouse over an advertisement.

Advertisement bar **405** shown in Figure 4, according to the preferred embodiment, must be loaded to maintain a connection with the ISP. One method of determining whether the advertisement bar is loaded is for the TSR program embedded on the client's computer to take a screen shot of the client computer and analyze the color of the pixels. If the pixels do not match what should be there, it is assumed the advertisement bar has been removed. If the advertisement bar is removed or, alternatively, if it is moved from a selected position, then the client is disconnected from the ISP.

Another method to determine if the ISP client program is running is by use of a ping server **120**. Ping server **120** accomplishes this by sending an encrypted message to each client connected to the ISP. The client program must respond automatically as requested in the message. If the client does not respond, it is assumed that the ISP client program has been altered and a message is then sent to the Radius server to disconnect the client.

SELECTION OF ADVERTISEMENTS

Figure 6 illustrates the means for selecting advertisements for users. When the ISP client program transmits the user name and password **605**, proxy database server **125** verifies the user name and password **610** in the user database and transmits a list of advertisements to

the user **615**. The advertisement list is a list of advertisements targeted to users based on the their demographic information and other factors such as duration of advertisement and frequency shown to each user.

The advertisement weights are added up to reach a sum, XSUM, of all advertisement weights in the advertisement list **620**. The weight of each advertisement determines how many times it is put into the list. For example, an advertisement of weight 2 will go into the list twice whereas an advertisement of weight 30 would go into the list thirty times. Periodically, preferably every minute, a location within the list is picked randomly and that advertisement is displayed and removed from the list **625, 630**. Other factors such as the time of day to show the advertisement and the frequency per user will affect the selection process within the list. The higher the weight of each advertisement, the more times it will be shown. Once the advertisement list is empty, the ISP client program will recreate the list and cycle through it again **635**.

User database **145** contains the list of advertisements each user should view. As described below in connection with Figure 7, an advertisement administration tool determines which advertisements each user should view at the next logon **705**, updates lists of advertisements for each user and allows administrators to add advertisements, monitor statistics, and perform other useful functions.

A complete list of all available advertisements along with associated demographic and other target restrictions placed on the advertisement is preferably maintained on advertisement database server **150**. Advertisement database server **150** maintains a list of advertisements designated on a per country basis. Ad Database server **150** will contain advertiser billing information and contact information. Ad Database server **150** will also

contain current advertisement statistics. Ad Database server **150** will allow the advertisement administration tool (a Graphical User Interface ("GUI") program) to access this information to place, remove or update advertisements as well as display statistics to advertisers. The demographic and other target requirements are developed by the advertiser **710** can be entered into advertisement database server **150** by an ISP administrator **715**. The advertisement URL is stored in advertisement server **155** (**720**).

The ISP determines the weights associated with each advertisement based on payment and other agreements made with advertisers and demographic and other factors such as the frequency that an advertisement is to be displayed relative to other advertisements, the time of day, and how often an advertisement should be displayed to the same user.

For example, an advertisement could be restricted to males with ages between 20 to 30 to be shown between August 1st and August 3rd for a maximum of 5 times to each client.

The advertisement administration tool cycles through the list of users maintained in user database **145**. If a user matches the demographic profile of the advertisement and all other criteria are met, the advertisement is placed in the user's list of advertisements. The advertisement administration tool cycles through each user and matches them to appropriate advertisements **725**. If a user matches the advertisement targeting requirements, the advertisement is added to the user's list of advertisements **730** in user database **145**.

E-MAIL AND WEB SERVICE

Figure 8 illustrates the services provided by the ISP **835** (also shown in Figure 1, **190**). Client **805** can both transmit and receive e-mail **810** through an ISP e-mail system.

Client **805** can also access web pages through ISP web server **130** and host a web page on ISP web server **130** (**815**). The ISP system **835** also allows the ISP to transmit advertisements **820**, news and messages **825**, and to update user information profiles **830**. The ISP **835** provides its services through an Internet connection **840**.

While the preferred mode and best mode for carrying out the invention have been described, those familiar with the art to which this invention relates will appreciate that various alternative designs and embodiments for practicing the invention are possible, and will fall within the scope of the following claims.

What is claimed is:

1. A method for providing an internet service provider connection with advertising, the improvement comprising the steps of:

   (A) establishing a connection between a computer and an internet service provider;

   (B) framing a tool bar on a monitor of said computer;

   (C) shifting any object displayed on said computer monitor below said tool bar; and

   (D) displaying an advertisement in said tool bar.

2. The method claimed in claim 1, further comprising the step of determining whether to maintain said connection between said computer and said internet service provider.

3. The method claimed in claim 2, wherein the determining step includes running a terminal stay resident program on said computer, to determine whether to maintain said connection between said computer and said internet service provider.

4. The method claimed in claim 3, wherein the determining step includes the steps of:

   (A) using said terminal stay resident program to capture a screen shot of said monitor;

   (B) analyzing said screen shot to determine whether said advertisement is displayed on said monitor; and

   (C) disconnecting said connection between said computer and said internet service provider if said advertisement is not displayed.

5. The method claimed in claim 2, wherein the determining step includes using a ping server to determine whether to maintain said connection between said computer and said internet service provider.

6. The method claimed in claim 1, wherein said object is an icon.

7. The method claimed in claim 1, wherein said object is a window.

8. The method claimed in claim 4, wherein said analyzing step includes comparison of pixels in the advertisement with pixels of the monitor.

9. The method claimed in claim 5, wherein said determining step further includes, transmitting, from said internet service provider, a message to said computer, and, responding, from said computer to said internet service provider.

10. The method claimed in claim 1, wherein said establishing step and displaying step are substantially overlapping in time.

11. A system for providing an internet service provider connection with advertising on a user's computer, the improvement comprising:

(A) a computer operable to connect to an internet service provider;

(B) a tool bar framed on a monitor of said computer;

(C) an object displayed on said monitor, wherein said object is shifted below said tool bar on said monitor; and

(D) an advertisement displayed in said tool bar.

12. The system claimed in claim 11, further comprising a determining unit to determine whether to maintain a connection between said computer and said internet service provider.

13. The system claimed in claim 12, wherein said determining unit includes a terminal stay resident program on said computer, to determine whether to maintain said connection between said computer and said internet service provider.

14. The system claimed in claim 13, wherein said terminal stay resident program captures a screen shot of said monitor, analyzes said screen shot to determine whether said advertisement is displayed on said monitor, and disconnects said connection between said computer and said internet service provider if said advertisement is not displayed.

15. The system claimed in claim 12, wherein said determining unit includes a ping server, wherein said ping server determines whether to maintain said connection between said computer and said internet service provider.

16. The system claimed in claim 11, wherein said object is an icon.

17. The system claimed in claim 11, wherein said object is a window.

18. The system claimed in claim 14, wherein said terminal stay resident program analyzes said screen shot by a comparison of pixels in said advertisement with pixels of said monitor.

19. The system claimed in claim 15, wherein said ping server transmits a message from said internet service provider to said computer, and receives a message from said computer to said internet service provider.

20. The system claimed in claim 11, wherein said advertisement is displayed at substantially the same time as said connection is being established between said computer and said internet service provider.

21. A method for providing an internet service provider connection with advertising, the improvement comprising the steps of:

(A) establishing a connection between a computer and an internet service provider, wherein an advertisement is displayed on a monitor while establishing said connection;

(B) framing a tool bar on said monitor of said computer;

(C) shifting any object displayed on said computer monitor below said tool bar, wherein said object is an icon or said object is a window;

(D) displaying said advertisement in said tool bar; and

(E) determining whether to maintain a connection between said computer and said internet service provider, wherein the determining step further includes the steps of:

(i) using a terminal stay resident program to capture a screen shot of said monitor;

(ii) analyzing said screen shot to determine whether said advertisement is displayed on said monitor, wherein said analyzing step includes comparison of pixels in the advertisement with pixels of the monitor; and

(iii) disconnecting said connection between said computer and said internet service provider if said advertisement is not displayed.

22. A system for providing an internet service provider connection with advertising on a user's computer, the improvement comprising:

(A) a computer operable to connect to an internet service provider;

(B) a tool bar framed on a monitor of said computer;

(C) an object displayed on said monitor, wherein said object is shifted below said tool bar on said monitor, wherein said object is an icon or said object is a window;

(D) an advertisement displayed in said tool bar, wherein said advertisement is displayed at substantially the same time as a connection is being established between said computer and said internet service provider; and

(E) a terminal stay resident program running on said computer, wherein said terminal stay resident program captures a screen shot of said monitor, analyzes said screen shot by a comparison of pixels in said advertisement with pixels of said monitor to determine whether said advertisement is displayed on said monitor, and disconnects said connection between said computer and said internet service provider if said advertisement is not displayed.

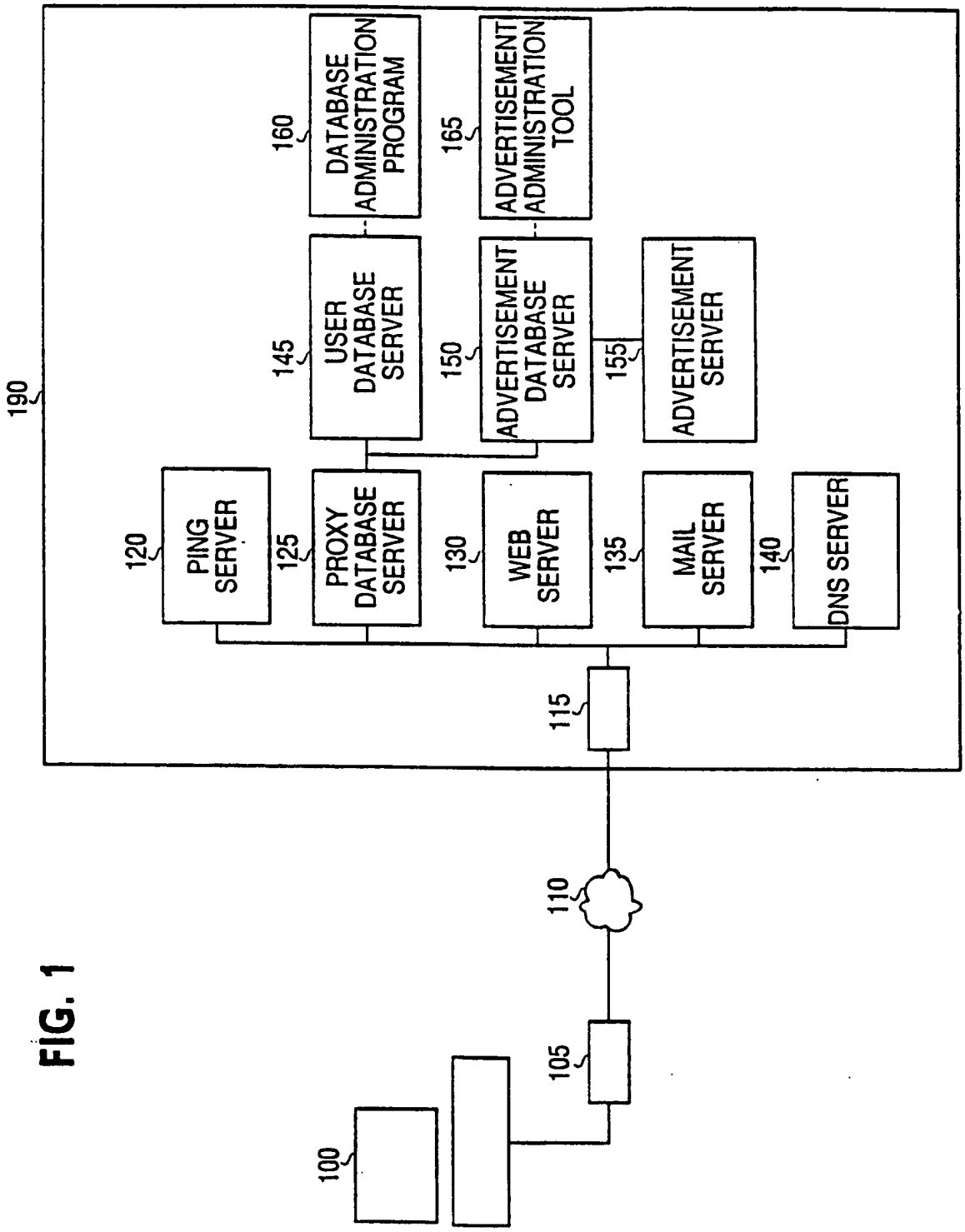


FIG. 1

FIG. 2

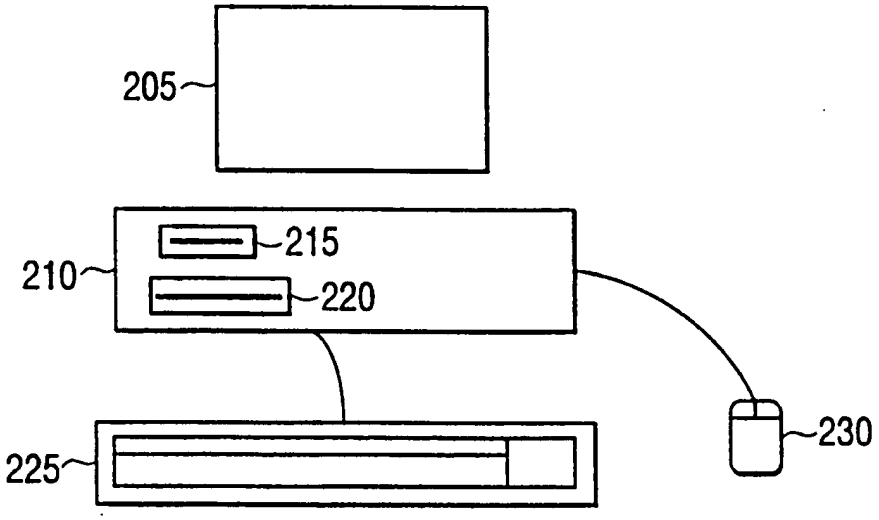
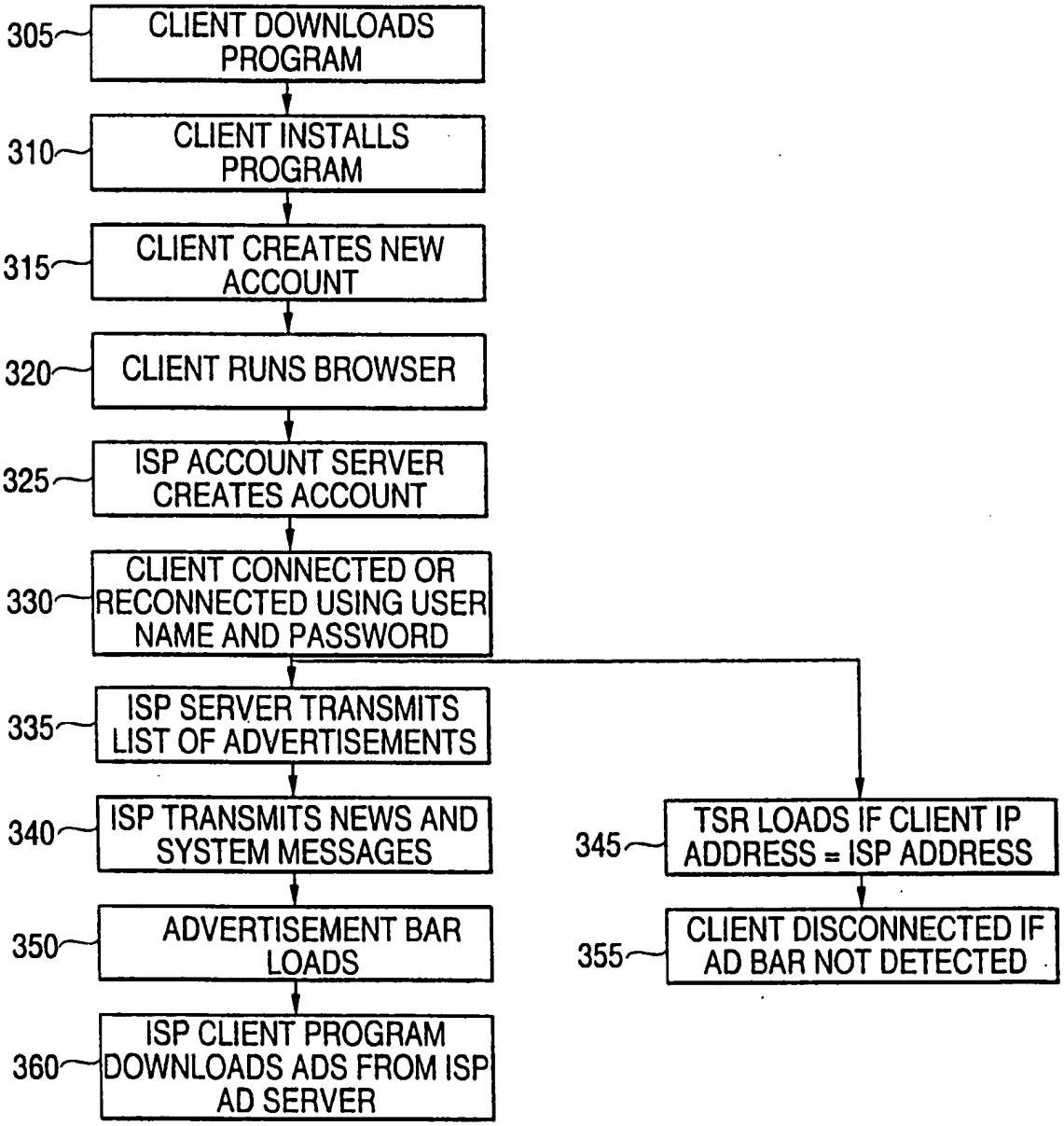


FIG. 3



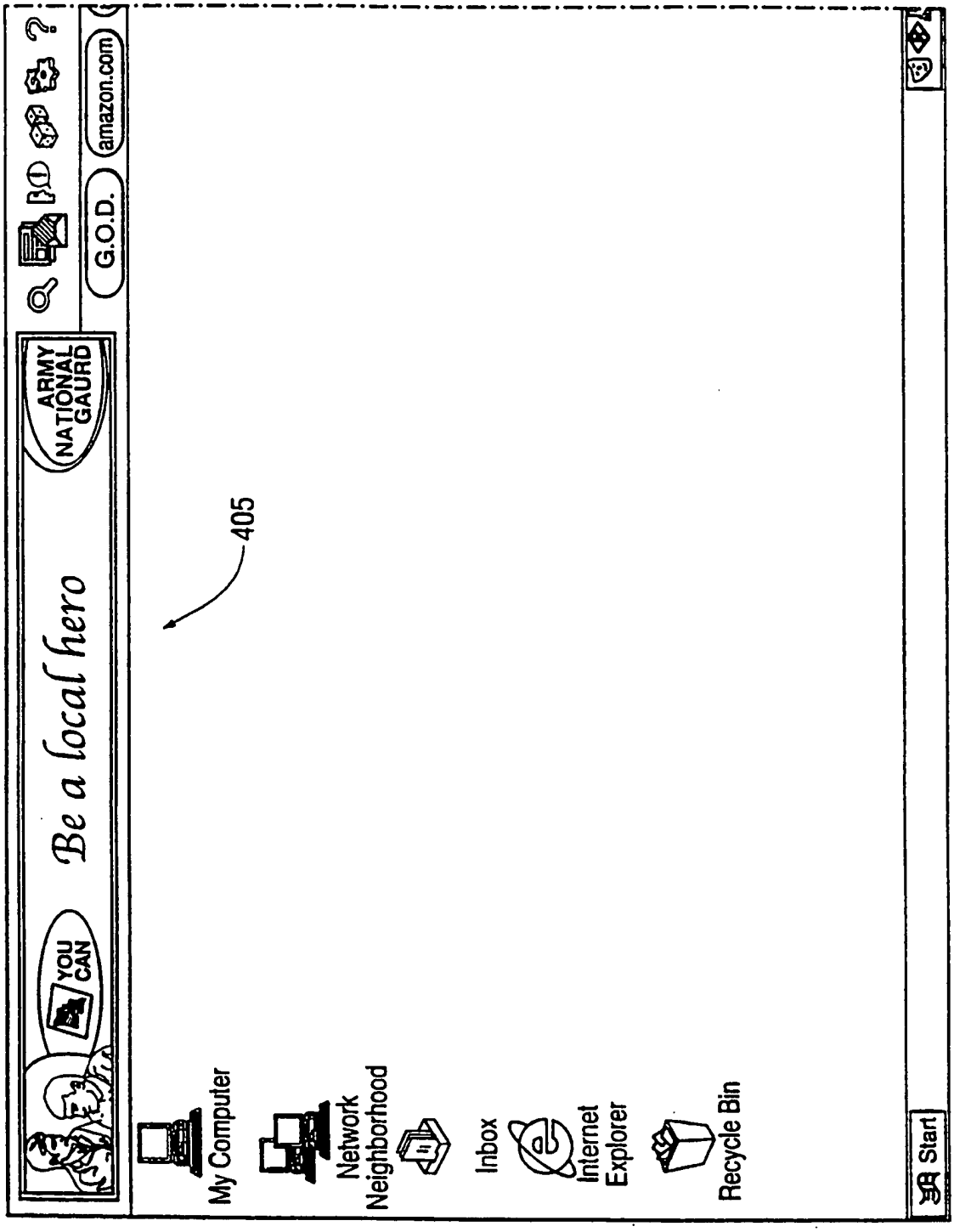


FIG. 4

FIG. 5

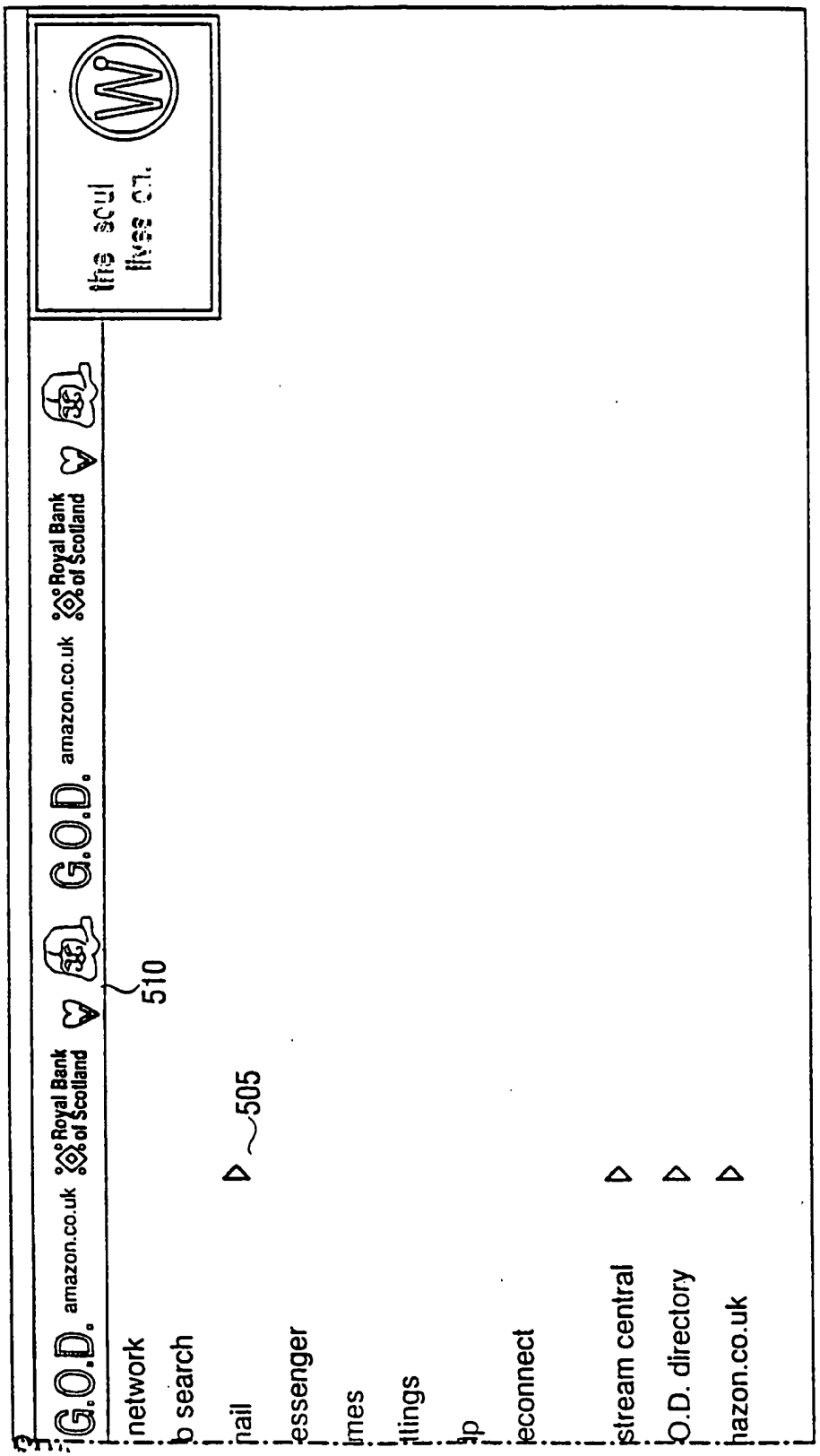


FIG. 6

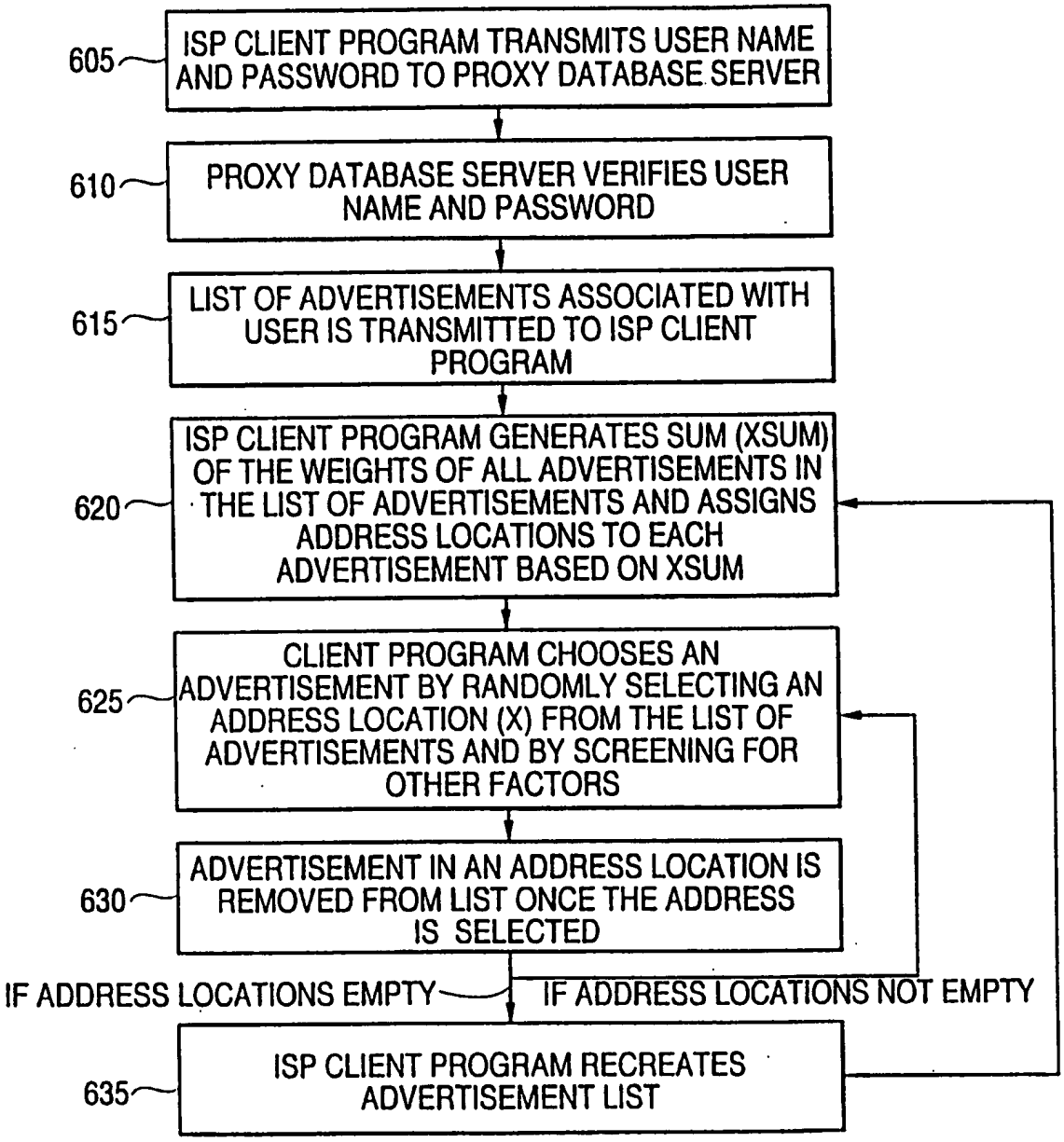

605
ISP CLIENT PROGRAM TRANSMITS USER NAME AND PASSWORD TO PROXY DATABASE SERVER
610
PROXY DATABASE SERVER VERIFIES USER NAME AND PASSWORD
615
LIST OF ADVERTISEMENTS ASSOCIATED WITH USER IS TRANSMITTED TO ISP CLIENT PROGRAM
620
ISP CLIENT PROGRAM GENERATES SUM (XSUM) OF THE WEIGHTS OF ALL ADVERTISEMENTS IN THE LIST OF ADVERTISEMENTS AND ASSIGNS ADDRESS LOCATIONS TO EACH ADVERTISEMENT BASED ON XSUM
625
CLIENT PROGRAM CHOOSES AN ADVERTISEMENT BY RANDOMLY SELECTING AN ADDRESS LOCATION (X) FROM THE LIST OF ADVERTISEMENTS AND BY SCREENING FOR OTHER FACTORS
630
ADVERTISEMENT IN AN ADDRESS LOCATION IS REMOVED FROM LIST ONCE THE ADDRESS IS SELECTED
IF ADDRESS LOCATIONS EMPTY
IF ADDRESS LOCATIONS NOT EMPTY
635
ISP CLIENT PROGRAM RECREATES ADVERTISEMENT LIST

FIG. 7

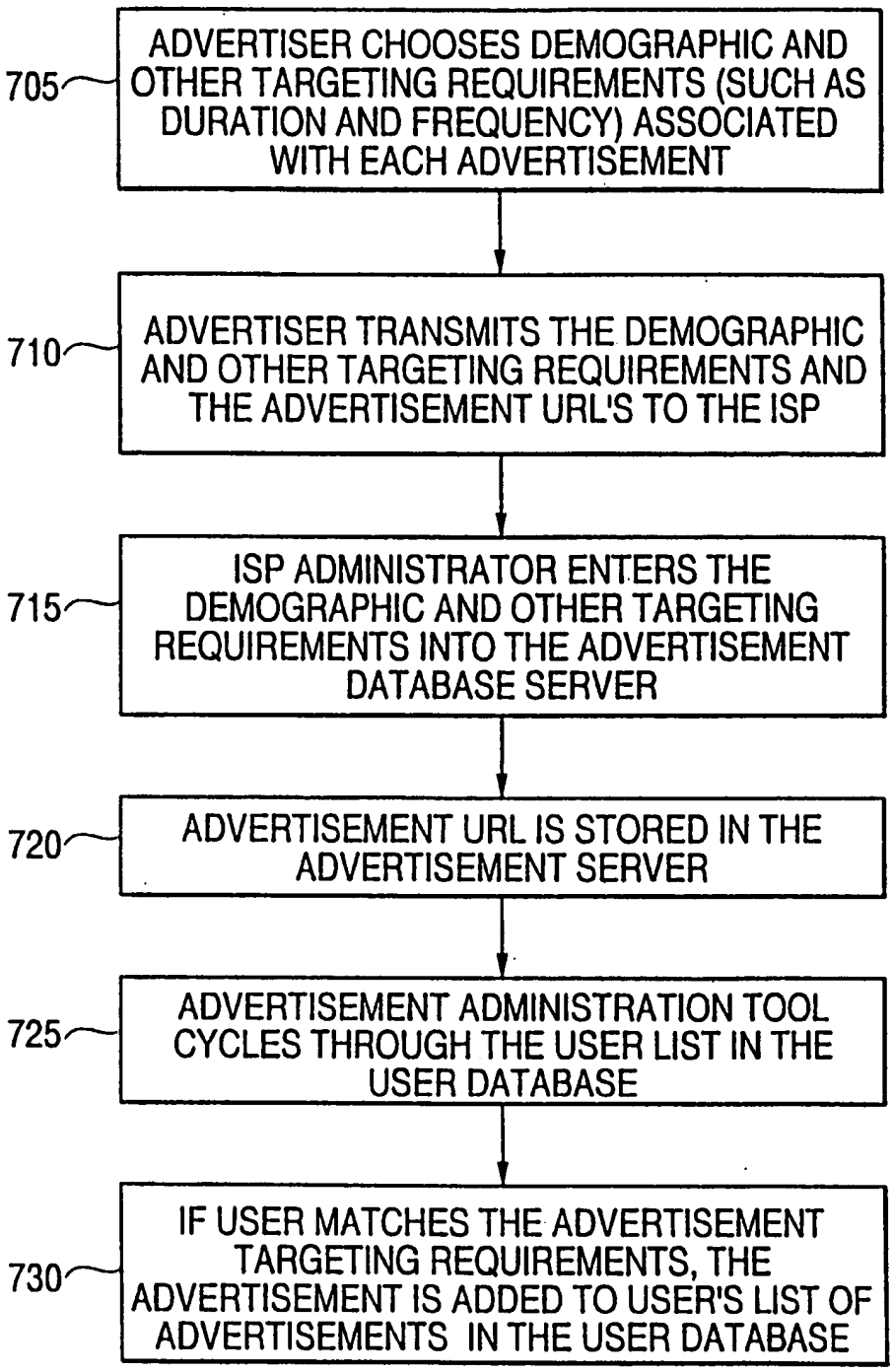
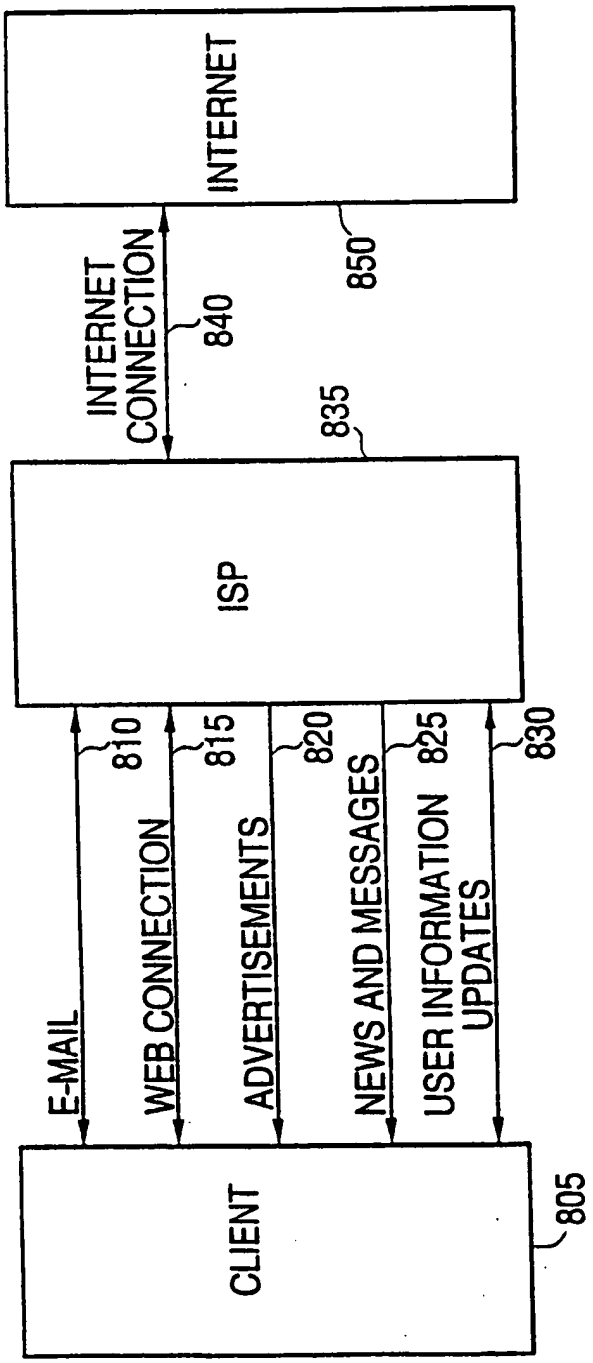


FIG. 8



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/05595

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) :G06F 17/30
US CL :705/26, 27
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/26, 27

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	"http://www.aol.com", 01 January 2000 (1.1.00), Pages 1-2.	1-3, 6-7, 9-10, 12-13
A	US 5,819,092 A (FERGUSON et al.) 06 October 1998 (6.10.98), Entire Document.	1-22
A,P	US 5,937,037 A (KAMEL et al.) 10 August 1999 (10.8.99), Entire Document.	1-3, 5-7, 9-10. 12-13.
A	US 5,809,481 A (BARON et al.) 15 September 1998 (15.9.98), Entire Document.	1-22.
A	US 5,636,346 A (SAXE) 03 June 1997 (3.6.97), Entire Document.	1-22

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search	Date of mailing of the international search report
05 JUNE 2000	03 JUL 2000
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Form PCT/ISA/210 (second sheet) (July 1998) *